REMARKS/ARGUMENTS

This Amendment is being filed in response to the Final Office Action dated May 21, 2007. Reconsideration and allowance of the application in view of the remarks to follow are respectfully requested.

Claims 1-4 and 8-13 are currently pending in the Application. Claim 1 is the independent claim.

In the Office Action, claim 4 is objected to for a certain informality. In response, claim 4 is amended to address the informality noted by the Examiner. Accordingly, withdrawal of the objection to claim 4 is respectfully requested.

Claims 1-4 and 8-13 are rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Perkas (High-Strength Maraging Steels) in view of U.S. Patent No. 5,244,375 to Laurence ("Laurence").

Perkas discloses high-strength maraging steel. It is undisputed that Perkas fails to disclose or suggest "maraging stainless steel would be plasma-nitrided at a temperature below 500 °C." (See, Final Office Action, bottom of page 2 and continuing onto page 3.)

Laurence is cited to cure this deficiency in Perkas, however, it is respectfully submitted that reliance on Laurence is

misplaced. Laurence discloses a ferrous-based press plate subjected to plasma-nitriding at an elevated temperature being substantially below 1000 ° F., which corresponds to 538° C.

Laurence treats steel plate with a process that includes a plasma-nitriding application at a maximum elevated temperature of 1000° F, as shown in section V of Laurence's Fig. 4 plate temperature/time graph. The Fig. 4 temperature/time graph shows time sections I, II, III and IV that precede section V, included to make sure that the maximum elevated temperature of 1000° F is reached by stable temperature steps before plasma nitriding in section V to prevent structural problems before further subjecting the plasma-nitrided plate to a secondary laminate process. Laurence's 1000° F (538° C) temperature as disclosed by Fig. 4, section V, is critical to Laurence's process as clearly indicated by the lengths gone to in Laurence for achieving that temperature informally (see, Col. 8, lines 21-56).

Applicants' claim 1 method is not anticipated or made obvious by the teachings of Perkas in view of Laurence. Perkas and Laurence together do not disclose or suggest a method of plasma-nitriding stainless maraging steel at a temperature below 500° C, as claimed for the purposes disclosed. It is critical that

Laurence's plasma-nitriding is implemented only after a temperature of 1000°F (538°C) is reached, which does not overlap Applicants' claimed temperature range of less than 500° C. Moreover, Laurence's disclosure does not support determining applicant's claimed range of less than 500°C by routine experimentation.

MPEP §2144.05 (IIA) provides the legal standard for optimization within prior art condition or routine experimentation, stating that generally, differences in concentration or temperature will not support patentability without evidence indicating such temperature or concentration is critical. In re Aller, 105 USPQ 233, 235 (CCPA 1995). The general condition of claim 1 (less than 500°C), however, is not disclosed by Laurence. Because the ranges do not overlap, Applicants' claimed range cannot be said to be "optimized" in view of Laurence. Applicants respectfully assert that Laurence's elevated temperature of 538°C for plasma-nitriding does not establish that claim 1 is prima facie obvious under Aller.

However, even if a prima facie case of obviousness is accepted in arguendo (although clearly this point is disputed as indicated above) due to Laurence's non-overlapping temperature range under Aller, it is respectfully submitted that Applicants' separate and non-overlapping temperature range is critical to the claimed

method. The MPEP at §2144.05 (III) sets forth the standard for rebutting a prima facie case of obvious with respect to overlapping temperature ranges based on showing criticality of the differences in the overlapping ranges. In re Woodruff, 16 USPQ2d 1934 (Fed. Cir. 1990).

Laurence at col. 4, lines 54-63, describes how section V of Fig. 4 shows the maximum temperature at which the actual plasma-nitriding is carried out (1000° F).

Applicants' Specification establishes the criticality of plasma-nitriding in a non-overlapping range of under 500°. The Specification states at page 2, line 30 to page 3, line 4, and page 3, line 33 to page 4, line 4, that the temperature at which the plasma-nitriding and precipitation-hardening is carried out ranges from 300 °C to 500 °C, preferably from 370 to 380°C, and more preferably 375°C, depending on the composition of the material involved, and never exceed 500°C in order to provide a type of steel that is both very hard and very well corrosion-resistant, while maintaining sufficient tensile strength.

The duration of the plasma-nitriding depends on the desired thickness of the hardened layer and the temperature used. For example, plasma-nitriding at 500°C for 2 hours gives a 22 µm layer

thickness, at 450°C for 5 hours gives a 17 µm layer thickness, and at 375°C for 20 hours gives an 8 µm layer thickness. The resulting HV for the stainless maraging steel so treated may be as high as 1500 HV with a Young modulus in the compound layer increased by 20 per cent to 25 per cent compared to the base material. This cannot occur outside the critical range of not greater that 500°C. The Applicants recognized that others have performed plasma-nitriding however in prior systems such as Laurence, "[t]reatment at high temperatures can lead to spatial distortions of the product. Also the formation of chromium compounds, notably chromium nitride, adversely affect the corrosion resistance. But, most important, none of the methods proposed for stainless steels yield sufficient hardness." (See, present application, page 3, lines 25-29.) As pointed out in the present application, "[t]he resulting hardness [achieved by the method described in the present application] may be as high as 1500 HV, a remarkable value in view of the prior art ..." (See, present application, page 4, lines 7-8.)

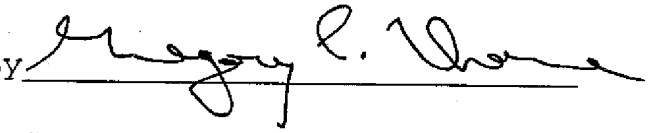
Based on the foregoing, Applicants respectfully submit that independent claim 1 is patentable over Perkas alone or together with Laurence, and notice to this effect is earnestly solicited. Claims 2-4 and 8-13 depend from claim and accordingly are allowable

for at least this reason as well as for the separately patentable elements contained in each of the claims. For example, claim 13 is distinguishable because Perkas and Laurence together fail to disclose forming the stainless steel into a cutting tool before the plasma-nitriding is carried out in the critical temperature range of less than 500° C. Further, claims 8 and 11 are distinguishable because Perkas and Laurence together fail to disclose the plasma-nitriding and the precipitation-hardening is carried out at a temperature between 370°C and 380°C or at 375°C as recited in claim 9. Accordingly, separate consideration and allowance of each of dependent claims 2-4 and 8-13 is respectfully requested.

In addition, applicants deny any statement, position or averment of the Examiner that is not specifically addressed by the foregoing argument and response. Any rejections and/or points of argument not addressed would appear to be moot in view of the presented remarks. However, the Applicants reserve the right to submit further arguments in support of the above stated position, should that become necessary. No arguments are waived and none of the Examiner's statements are conceded.

Applicants have made a diligent and sincere effort to place this application in condition for immediate allowance and notice to this effect is earnestly solicited.

Respectfully submitted,

By 

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